

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (previously presented): A method for performing design rule checking on an electronic design, the method comprising:
 - receiving a netlist of the electronic design, said netlist having a plurality of nodes;
 - extracting information from each of the plurality of nodes in the netlist, wherein the extracting information operation is done only once for each node in the netlist, whereby the extracted information is available to a set of predefined rules;
 - applying the set of predefined rules to the previously extracted information of the plurality of nodes in the netlist; and
 - determining whether any of the predefined rules have been violated by any of the plurality of nodes, wherein the applying operation is performed by a rule checking routine, which checks the electronic design.
2. (original): A method as recited in claim 1, wherein the applying operation comprises:
 - recognizing whether any of the predefined rules require extracted information from a neighboring node, the neighboring node being different from a node currently under consideration; and
 - identifying the neighboring node for comparing under the rule checking routine if any of the predefined rules require extracted information from the neighboring node, wherein the recognizing and identifying operations are collectively performed by a traverser routine.
3. (original): A method as recited in claim 1, wherein the recited operations are each done automatically, without user intervention.
4. (canceled)
5. (currently amended): ~~A method as recited in claim 1 for performing design rule checking on an electronic design, the method comprising:~~
 - ~~receiving a netlist of the electronic design, said netlist having a plurality of nodes;~~
 - ~~extracting information from each of the plurality of nodes in the netlist, whereby the extracted information is available to a set of predefined rules,~~ wherein the extracting information operation comprises determining what information is required to apply the predefined rules to the plurality of nodes;
 - ~~applying the set of predefined rules to the previously extracted information of the plurality of nodes in the netlist; and~~

~~determining whether any of the predefined rules have been violated by any of the plurality of nodes, wherein the applying operation is performed by a rule checking routine, which checks the electronic design.~~

6. (currently amended): A method as recited in claim 1 ~~for performing design rule checking on an electronic design, the method comprising:~~

~~receiving a netlist of the electronic design, said netlist having a plurality of nodes;~~
~~extracting information from each of the plurality of nodes in the netlist, wherein the extracted information comprises one or more properties selected from the group consisting of fanin count, fanout count, atom type, and port source atom type, whereby the extracted information is available to a set of predefined rules;~~

~~applying the set of predefined rules to the previously extracted information of the plurality of nodes in the netlist; and~~

~~determining whether any of the predefined rules have been violated by any of the plurality of nodes, wherein the applying operation is performed by a rule checking routine, which checks the electronic design.~~

7. (original): A method as recited in claim 1, further comprising:

receiving the set of predefined rules.

8. (original): A method as recited in claim 7, wherein the set of predefined rules comprises at least one hardcoded rule, which was predefined without any user intervention.

9. (original): A method as recited in claim 7, wherein the set of predefined rules comprises at least one hardcoded rule, which has been modified in accordance with user instructions.

10. (original): A method as recited in claim 7, wherein each predefined rule conforms to a single specified format.

11. (currently amended): A method as recited in claim 10 ~~for performing design rule checking on an electronic design, the method comprising:~~

~~receiving a netlist of the electronic design, said netlist having a plurality of nodes;~~
~~extracting information from each of the plurality of nodes in the netlist, whereby the extracted information is available to a set of predefined rules;~~

~~receiving the set of predefined rules, wherein each predefined rule conforms to a single specified format, wherein the format is a hierarchical arrangement comprising a rule -> a sub-rule -> a basic rule;~~

~~applying the set of predefined rules to the previously extracted information of the plurality of nodes in the netlist; and~~
~~determining whether any of the predefined rules have been violated by any of the plurality of nodes, wherein the applying operation is performed by a rule checking routine, which checks the electronic design.~~

12. (original): A method as recited in claim 1, wherein the applying the set of predefined rules to the previously extracted information of the plurality of nodes in the netlist comprises:

applying a plurality of sub-rules related by a logical operator.

13. (original): A method as recited in claim 12, wherein the logical operator is selected from the group consisting of AND, NAND, NOR, XOR, and OR.

14. (original): A method as recited in claim 1, wherein the plurality of predefined rules is selected from the group consisting of electrical rules, connectivity rules, clock rules, timing closure rules, reset rules, and signal race rules.

15. (original): A method as recited in claim 1, further comprising:
outputting a violation report, the report containing the identified violations.

16. (previously presented): An apparatus for performing design rule checking on an electronic design, the apparatus comprising:

a netlist creator that produces a netlist describing the functional representation of the electronic design across a plurality of nodes;

an information extractor that extracts information from the plurality of nodes in the netlist, the information being specific to each node, wherein the information extractor extracts information only once for each node in the netlist; and

a rule checking engine that applies a set of predefined rules to the extracted information of the plurality of nodes in the netlist and that identifies whether any of the predefined rules has been violated by any portion of the electronic design.

17. (original): An apparatus as recited in claim 16, further comprising:

a traverser engine that recognizes whether any of the predefined rules require extracted information from a neighboring node and further identifies the neighboring node for evaluating with the rule checking engine if any of the predefined rules require extracted information from the neighboring node, the neighboring node being separate from a node currently under comparison.

18. (canceled)

19. (currently amended): An apparatus as recited in claim 16 for performing design rule checking on an electronic design, the apparatus comprising:

~~a netlist creator that produces a netlist describing the functional representation of the electronic design across a plurality of nodes;~~

~~an information extractor that extracts information from the plurality of nodes in the netlist, the information being specific to each node, wherein the information extractor extracts information based on what is required to apply the a set of predefined rules to the plurality of nodes; and~~

~~a rule checking engine that applies the set of predefined rules to the extracted information of the plurality of nodes in the netlist and that identifies whether any of the predefined rules has been violated by any portion of the electronic design.~~

20. (currently amended): An apparatus as recited in claim 16 for performing design rule checking on an electronic design, the apparatus comprising:

~~a netlist creator that produces a netlist describing the functional representation of the electronic design across a plurality of nodes;~~

~~an information extractor that extracts information from the plurality of nodes in the netlist, the information being specific to each node, wherein the information extractor extracts information that is selected from the group consisting of fanin count, fanout count, atom type, and port source atom type; and~~

~~a rule checking engine that applies a set of predefined rules to the extracted information of the plurality of nodes in the netlist and that identifies whether any of the predefined rules has been violated by any portion of the electronic design.~~

21. (original): An apparatus as recited in claim 17, further comprising:

a rule creator for preparing a set of predefined rules.

22. (original): An apparatus as recited in claim 21, wherein the rule creator is configured for selecting at least one hardcoded rule, the hardcoded rule having been predefined without any user intervention.

23. (original): An apparatus as recited in claim 21, wherein the rule creator is configured for receiving at least one hardcoded rule and modifying the hardcoded rule in accordance with user instructions, the hardcoded rule having been predefined without any user intervention.

24. (original): An apparatus as recited in claim 21, wherein the rule creator is configured for receiving the set of predefined rules from a user, and wherein each predefined rule conforms to a single specified format.

25. (currently amended): An apparatus as recited in claim 24 ~~for performing design rule checking on an electronic design, the apparatus comprising:~~

~~a netlist creator that produces a netlist describing the functional representation of the electronic design across a plurality of nodes;~~

~~an information extractor that extracts information from the plurality of nodes in the netlist, the information being specific to each node;~~

~~a rule creator for preparing a set of predefined rules, wherein the rule creator is configured for receiving the set of predefined rules from a user, and wherein each predefined rule conforms to a single specified format, wherein the specified format is a hierarchical arrangement of a rule -> a sub-rule -> a basic rule;~~

~~a rule checking engine that applies the set of predefined rules to the extracted information of the plurality of nodes in the netlist and that identifies whether any of the predefined rules has been violated by any portion of the electronic design; and~~

~~a traverser engine that recognizes whether any of the predefined rules require extracted information from a neighboring node and further identifies the neighboring node for evaluating with the rule checking engine if any of the predefined rules require extracted information from the neighboring node, the neighboring node being separate from a node currently under comparison.~~

26. (original): An apparatus as recited in claim 25, wherein the specified format allows the rule to include a plurality of sub-rules related by one or more logical operators.

27. (original): An apparatus as recited in claim 26, wherein one or more logical operators are selected from the group consisting of AND, NAND, NOR, XOR, and OR.

28. (original): An apparatus as recited in claim 16, wherein the plurality of predefined rules is selected from the group consisting of electrical rules, connectivity rules, clock rules, timing closure rules, reset rules, and signal race rules.

29. (previously presented): An apparatus as recited in claim 17, further comprising:
a storage medium that stores the extracted information such that it is available to a set of predefined rules.

30. (original): An apparatus as recited in claim 17, further comprising:

an output device for outputting a violation report, the report containing the identified violations.

31. (previously presented): A computer program product comprising a machine readable medium on which is provided program instructions for performing design rule checking on an electronic design, the program instructions comprising:

instructions for receiving a netlist of the electronic design, said netlist having a plurality of nodes;

instructions for extracting information from each of the plurality of nodes in the netlist, wherein the extracting is done only once for each node in the netlist, whereby the extracted information is available to a set of predefined rules;

instructions for applying the set of predefined rules to the previously extracted information of the plurality of nodes in the netlist; and

instructions for determining whether any of the predefined rules have been violated by any of the plurality of nodes, wherein the applying operation is performed by a rule checking routine, which checks the electronic design.

32. (original): A computer program product as recited in claim 31, further comprising:

instructions for recognizing whether any of the predefined rules require extracted information from a neighboring node, the neighboring node being different from a node currently under consideration; and

instructions for identifying the neighboring node for comparing under the rule checking routine if any of the predefined rules require extracted information from the neighboring node, wherein the recognizing and identifying operations are collectively performed by a traverser routine.

33. (original): A computer program product as recited in claim 31, further comprising:

instructions for receiving the set of predefined rules.

34. (original): A computer program product as recited in claim 31, further comprising:

instructions for outputting a violation report, the report containing the identified violations.

35-49. (canceled)